

**REMARKS**

Claims 1-26 are pending in the application. Claims 6-9, 16-19, and 24-26 are withdrawn from further consideration as being drawn to a non-elected invention. Claims 1-5, 10-15 and 20-23 are rejected. Claims 10 and 15 are herein amended. The applicants submit that no new matter has been added.

**Restriction of the Claims**

An election was made with traverse to prosecute the invention of group 1, claims 1-5, 10-15, 20-23. Applicants hereby affirm this election in the present reply to the present Office Action.

**Claim Rejections under 35 U.S.C. §112, second paragraph**

*Claims 10 and 15 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

In claim 10, line 8, the Examiner asserts that the phrase “ceramic layer as arranged” should be changed to - -ceramic layer is arranged- -.

Applicants submit that the Examiner has misread the claim, and herein amend the claims to clarify the invention.

The Examiner asserts that Claim 15 is vague and indefinite at the end of the claim.

Applicants initially define a “first ceramic layer and a second ceramic layer” but do not define a first green sheet and a second green sheet. Applicants herein amend the claim to define a first and second ceramic layer, and also a first and second green sheet. Applicants submit that the present claim addresses and obviates the rejection.

**Claim Rejections under 35 U.S.C. §102(e)**

*Claims 1-5 are rejected under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,337,123 to Ryugo et al.*

The Examiner asserts that Ryugo et al. discloses a multilayered ceramic substrate comprised of at least two green sheets having different ceramic material, an intermediate layer and conductive material. The Examiner concludes that the shrinkage rates between the two green sheets and intermediate layer at the interfaces should be the same. It would also be obvious that the prior art intermediate layer has the same specific resistance because the intermediate layer includes both ferrite material and dielectric material which meets the invention.

Applicants respectfully disagree with the reasoning of the Examiner as to this rejection. The Examiner asserts that the intermediate layer disclosed by Ryugo et al. would have different shrinkage rates on the opposite surfaces, because the glass material from the two different green sheets from both sides permeates into the porous inorganic intermediate layer during firing. Therefore, the Examiner concludes that the shrinkage rates between the two green sheets and intermediate layer at the interfaces “should be the same”.

There does not appear to be any indication that Ryugo et al. meets the limitations of the present claims. That is, there is no indication that the intermediate layer of Ryugo et al. varies in composition in the direction of thickness thereof and exhibits substantially the same shrinkage as the first ceramic layer at a joint thereof with the first ceramic layer when fired and substantially the same shrinkage as the second ceramic layer at a joint thereof with the second ceramic layer when fired.

Applicants note that Ryugo et al. teaches that it provides means in which two substrate green sheets containing different low-temperature sintered ceramic materials are fired in a state wherein a shrinkage inhibiting green sheet containing an inorganic material which is not sintered at the sintering temperature of each of the low-temperature sintered ceramic materials is held between the two substrate green sheets. Therefore, the shrinkage-inhibiting green sheet restrains the substrate green sheets to prevent the occurrence of sintering shrinkage in the direction parallel to main surfaces so that shrinkage occurs only in the direction of the thickness. Applicants note that this means that the intermediate layer has a significantly reduced shrinkage rate than either of the ceramic layers to which it is attached. By having this reduced shrinkage rate, it acts to restrain the shrinkage of the two ceramic layers to which it is attached. Therefore, it appears that the limitation of the intermediate layer exhibiting substantially the same shrinkage as the first ceramic layer at a joint thereof with the first ceramic layer when fired and substantially the same shrinkage as the second ceramic layer at a joint thereof with the second ceramic layer when fired is not met by Ryugo et al.

**Claim Rejections under 35 U.S.C. §103(a)**

*Claims 1-5 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,476,728 to Nakano et al.*

The Examiner admits that Nakano et al. is silent about the compositional distribution of the intermediate layer. However, the Examiner asserts that, in view of the teaching of Nakano et al., one skilled in the art would fabricate an intermediate layer which has a close composition at the interface because it would minimize thermal stresses during firing.

Applicants respectfully disagree with this rejection, because Nakano et al. does not teach or suggest all the limitations of the present invention. Nakano et al. does not teach an intermediate layer varying in composition in the direction of thickness thereof and exhibiting substantially the same shrinkage as the first ceramic layer at a joint thereof with the first ceramic layer when fired and substantially the same shrinkage as the second ceramic layer at a joint thereof with the second ceramic layer when fired. Column 3, lines 12-17 of Nakano et al. specifically teaches that the expansion coefficient of the intermediate layer is **between** the expansion coefficients of either layer attached thereto. This implicitly admits that the expansion coefficients between the first ceramic layer and the intermediate are different, and also that the expansion coefficients between the second ceramic layer and the intermediate layer are different. There is also no suggestion that the composition of the intermediate layer of Nakano et al. varies across its width. It is taught to have a uniform expansion coefficient that is less than one layer to which it is attached, and more than the

other layer to which it is attached. Therefore, at least these limitations are not taught or suggested by this reference.

*Claims 10-15 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryugo et al.*

The Examiner asserts that Ryugo et al. teaches a green composite laminate comprised of a plurality of first substrate green sheets (48), a plurality of second substrate green sheets (49), and a plurality of shrinkage inhibiting green sheets (50). The Examiner concludes that in view of the teaching of Ryugo et al., one skilled in the art would have fabricated a ceramic laminate having two different green (ceramic) materials and an intermediate layer between the different green materials. The Examiner asserts that suggestion for this combination is because “the intermediate layer absorbs the two, it would be obvious in view of the prior art that one would modify the prior art and use a similar idea to fabricate a multilayer ceramic laminate which has different green sheets arrangements because it is a matter of design choice.

Applicants respectfully disagree with the rejection, because Ryugo et al. does not appear to teach or suggest all the claim limitations. Claim 10 recites a laminated composite device having a first ceramic layer in contact with a second ceramic layer that is compositionally different from the first, wherein one or both of the ceramic layers vary in composition in the direction of thickness thereof and exhibit substantially the same shrinkage as the other ceramic layer at the joint with the other ceramic layer when fired. In other words, the two layers are different from each other, yet exhibit the same shrinkage at a junction thereof.

On the other hand, Ryugo et al. teaches a three-layer structure, including a shrinkage-inhibiting intermediate sheet. Ryugo et al. does not appear to address a two-layer structure, in which at least one of the layers vary across its width so as to exhibit the same shrinkage as the other layer at a contact point. Therefore, Applicants assert that the cited reference does not teach or suggest all the limitations of the present claims.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees that may be due with respect to this paper to Deposit Account No. 01-2340.

Respectfully submitted,

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